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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/900,092	07/05/2001	Yonglin Huang	NFCS-00-020	4453

7590 09/11/2002
Timothy A. Brisson
Sierra Patent Group
P. O. Box 6149
Stateline, NV 89449

EXAMINER

CURTIS, CRAIG

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 09/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/900,092

Applicant(s)
HUANG et al.

Examiner
Craig Curtis

Art Unit
2872



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jul 5, 2001
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 3 6) ☐ Other:

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DETAILED ACTION

Claim Objections

1. Claims 2-5 and 9-14 are objected to because of the following informalities: Each and every occurrence of "faraday" in these claims should be replaced by "Faraday." Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pan et al. (5,566,259).

Pan et al. disclose the claimed invention--a dual-stage optical isolator comprising:

a first stage disposed (Fig. 3A, e.g.) along an optical path; and

a second stage (Fig. 3C, e.g.) disposed along said optical path (see Fig. 1), wherein said

first stage comprises:

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a first birefringent wedge having an optic axis and a first wedge angle (12A);

a second birefringent wedge and a second wedge angle (14A); and

a first Faraday rotator (13A) disposed between said first and second wedges;

wherein said first and second wedge angles are substantially equal (see Figs.);

wherein said first Faraday rotator is configured to rotate the polarization of applied light by 45° (see Fig. 3A);

a third birefringent wedge having an optic axis 90° apart from the second birefringent wedge and a third wedge angle (cf. 12A & 12B);

a fourth birefringent wedge having an optic axis 45° apart from the third birefringent wedge and a fourth wedge angle (see 14B); and

a second Faraday rotator disposed between said third and fourth wedges for rotating a polarization plane by 45° (see 13B);

wherein said first ray is the e-ray with respect to said first stage and is the o-ray with respect to said second stage, and said second ray is the o-ray with respect to said first stage and is the e-ray with respect to said second stage (see Figs. 2A, 2B);

wherein said e- and o- rays exit from said second stage having orthogonal polarizations and separated by a walk-off distance, thereby forming a plane (Id.)--EXCEPT FOR an explicit teaching wherein said second stage is rotated 90° (physically, it is presumed) with respect to said

first stage. Pan et al., however, do teach, as set forth above, wherein said dual-stage optical isolator operates on said e- and o-rays in such a manner that said first ray is the e-ray with respect to said first stage and is the o-ray with respect to said second stage (see Abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have oriented said second stage of said dual-stage optical isolator such that it be rotated 90° with respect to said first stage, for at least the purpose of providing an alternate way of ensuring that said e-ray with respect to said first stage be said o-ray with respect to said second wedge, and vice versa, thereby reducing, as already expressly taught by Pan et al., polarization mode dispersion.

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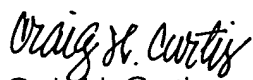
Contact Information

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig Curtis, whose telephone number is (703) 305-0776. The facsimile phone number for Art Unit 2872 is (703) 308-7721.

Any inquiry of a general nature regarding to status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.



**Audrey Chang
Primary Examiner
Technology Center 2800**



Craig H. Curtis
Group Art Unit 2872
5 September 2002